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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/295,709	04/21/99	JIANG	T 2911.1US

EXAMINER	
GRAYBILL, D	
ART UNIT	**PAPER NUMBER**
2814	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/295,709	Applicant(s) JIANG ET AL.	
	Examiner David E Graybill	Art Unit 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 September 2001* .

2a)☐ This action is FINAL. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7,8,15,16,25-31,38-44,46-51 and 57-61* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7,8,15,16,25-31,38-44,46-51 and 57-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

The amendment filed 8-20-01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is the claims 15, 29, 51, 52 and 57 limitations wherein the conductive material comprises both a generally planar first surface and a height-to-width ratio of at least approximately 3 to 1, and all of the limitations of claims 38-40, 42, and 58-61. To further clarify the rejection of claims 38-40, 42 and 58-61, it is noted that there is no original disclosure wherein the conductive bumps comprise the limitations of claims 38-40, 42 and 58-61.

Applicant is required to cancel the new matter in the reply to this Office Action.

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 15, 16, 29, 38-44, 51 and 57-61 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to

reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The non-described subject matter is the claims 15, 29, 51, 52 and 57 limitations wherein the conductive material comprises both a generally planar first surface and a height-to-width ratio of at least approximately 3 to 1, and all of the limitations of claims 38-40, 42, and 58-61.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 7, 8, 15, 16, 25-31, 38-44, 46-51 and 57-61 are rejected under 35 U.S.C. 102(a) as being anticipated by Pasch (5468681).

7. A semiconductor substrate 1850 including at least one adhesive patch 1812 comprised of a viscous adhesive material, the at least one adhesive patch including a first surface 1825e adjacent said semiconductor substrate and a second, smaller surface 1825c opposite said first surface exhibiting a generally planar portion over a substantial portion thereof.

25. The semiconductor substrate of 7, wherein said viscous adhesive material of said at least one adhesive patch comprises at least one of the group consisting of a polyimide, a phenolic resin, a thermoplastic, and a thermosetting plastic ("epoxy").

26. The semiconductor substrate of 7, wherein said at least one adhesive patch comprises at least one lateral edge exhibiting an angle of repose of at least approximately 20 degrees.

27. The semiconductor substrate of 7, wherein said at least one adhesive patch comprises at least one trailing edge exhibiting an angle of repose of at least approximately 13 degrees.

28. The semiconductor substrate of 7, wherein said at least one adhesive patch comprises at least one leading edge exhibiting an angle of repose of at least approximately 20 degrees.

29. The semiconductor substrate of 7, wherein said at least one adhesive patch comprises a height-to-width ratio of at least approximately 3 to 1.

15. A flip-chip including at least one conductive bump 1812 comprised of a viscous conductive material, the at least one conductive bump exhibiting height-to-width ratio of at least approximately 3 to 1 and including a first surface 1825e adjacent said flip-chip and a second surface 1825c opposite said first surface exhibiting a generally planar portion over a substantial portion thereof.

38. The flip-chip of 15, wherein said at least one conductive bump comprises at least one lateral edge exhibiting an angle of repose of at least approximately 20 degrees.

39. The flip-chip of 15, wherein said at least one conductive bump comprises at least one trailing edge exhibiting an angle of repose of at least approximately 12 degrees.

40. The flip-chip of 15, wherein said at least one conductive bump comprises at least one leading edge exhibiting an angle of repose of at least approximately 20 degrees.

41. The flip-chip of 15, wherein said conductive material of said at least one conductive bump comprises a conductive polymer material.

42. The flip-chip of 15, wherein said viscous conductive material of said at least one conductive bump comprises at least one of the group consisting of a polyimide, a phenolic resin, a thermoplastic, and a thermosetting plastic.

46. A semiconductor substrate 1850 including at least one adhesive patch 1812 comprised of a viscous adhesive material, the at least one adhesive patch including a first surface 1825e adjacent said semiconductor substrate and a second surface 1825c opposite said first surface, said second surface exhibiting a generally planar portion over a substantial portion thereof.

47. The semiconductor substrate of 46, wherein said viscously dispensed adhesive material comprises at least one of the group consisting of a polyimide, a phenolic resin, a thermoplastic, and a thermosetting plastic.

48. The semiconductor substrate of 46, wherein said at least one adhesive patch comprises at least one lateral edge exhibiting an angle of repose of at least approximately 20 degrees.

49. The semiconductor substrate of 46, wherein said at least one adhesive patch comprises at least one trailing edge exhibiting an angle of repose of at least approximately 13 degrees.

50. The semiconductor substrate of 46, wherein said at least one adhesive patch comprises at least one leading edge exhibiting an angle of repose of at least approximately 20 degrees.

51. The semiconductor substrate of 46, wherein said at least one adhesive patch exhibits a height-to-width ratio of at least approximately 3 to 1.

58. The flip-chip of 57, wherein said viscous conductive material of said at least one conductive bump comprises at least one of the group consisting of a polyimide, a phenolic resin, a thermoplastic, and a thermosetting plastic.

57. A flip-chip 1850 including at least one conductive bump 1812 comprised of a viscous conductive material, the at least one conductive bump exhibiting a height-to-width ratio of at least

approximately 3 to 1 and including a first surface 1825e adjacent said flip-chip and a second surface 1825c opposite said first surface, said second surface exhibiting a generally planar portion over a substantial portion thereof.

59. The flip-chip of 57, wherein said at least one conductive bump comprises at least one lateral edge exhibiting an angle of repose of at least approximately 20 degrees.

60. The flip-chip of 57, wherein said at least one conductive bump comprises at least one trailing edge exhibiting an angle of repose of at least approximately 13 degrees.

61. The flip-chip of 57, wherein said at least one conductive bump comprises at least one leading edge exhibiting an angle of repose of at least approximately 20 degrees.

Although Pasch does not appear to explicitly teach the particular claimed edge angles of repose, these limitations are illustrated in Figure 18d and taught, as cited, "globs 1825a contact the pads and spread out to form conductive liquid seals 1825," and are an inherent property of the spread out globs.

Also, although Pasch does not appear to explicitly teach the process limitations of claims 7, 8, 15, 16, 30, 31, 43 and 44, the product of Pasch inherently possesses the structural characteristics imparted by the process limitations. See In re Fitzgerald, Sanders, and Bagheri, 205 USPQ 594 (CCPA 1980).

Applicant's amendment and remarks filed 8-30-01 are addressed in the rejection supra and are further addressed infra.

In order to support a traversal of the 35 U.S.C. 132 rejection of the amendment and the concomitant 35 U.S.C. 112, first paragraph rejection of the claims, applicant cites specific portions of the disclosure. However, Applicant's traversal is respectfully deemed to be unpersuasive because applicant merely cites without further elucidation, and the citations do not otherwise appear to support the traversal. In fact, the apparent irrelevancy of many of the citations, for example, "specification, page 18, lines 1-3," suggests that they are cited in error.

Also, applicant contends that Pasch does not teach, "at least one adhesive patch including a first surface adjacent said semiconductor substrate and a second, smaller surface opposite said first surface exhibiting a generally planar portion over a substantial portion thereof." This contention is respectfully traversed because, as explicitly and clearly recited in the rejection, Pasch teaches this limitation. To further clarify, attention is directed to Figure 18e, wherein this limitation is clearly illustrated.

Similarly, applicant alleges that Pasch does not teach other claimed dimensions, yet Pasch is explicitly and clearly relied on for these teachings.

Applicant also asserts that Takahashi does not teach the claimed product by process limitations. This assertion is respectfully deemed to be unpersuasive because Takahashi is not relied on in the rejection for these teachings. To further clarify, it is noted that rejection under 35 U.S.C. 102 and/or 35 U.S.C. 103 is indicated where prior art discloses a product that appears to be either identical with or only slightly different from the product claimed in a product by process claim. Further, applicant can be required, to prove that the prior art product does not necessarily or inherently possess characteristics of the claimed product. Whether the rejection is based on inherency under 35 U.S.C. 102, on prima facie obviousness under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same. When, as here, there is reason to believe that the functional limitation asserted to be critical for establishing novelty in the claimed subject matter is an inherent characteristic of the prior art, the Office possesses authority to require applicant to prove that subject matter shown to be in the prior art does not possess the characteristic

relied on. See In re Fitzgerald, Sanders, and Bagheri, 205 USPQ 594 (CCPA 1980).

Any telephone inquiry of a general nature or relating to the status (MPEP 203.08) of this application or proceeding should be directed to the group receptionist whose telephone number is 703-308-1782.

Any telephone inquiry concerning this communication or earlier communications from the examiner should be directed to David E. Graybill at (703) 308-2947. Regular office hours: Monday through Friday, 8:30 a.m. to 6:00 p.m.

The fax phone number for group 2800 is 703/305-3431.

David E. Graybill
Primary Examiner
Art Unit 2814

D.G.
7-Nov-01